

The mathematical modeling and simulation presented in this book were done using the pertinent physical parameters that influence temperatures responses of the poultry house and the established theoretical work. The modeling of the dynamics of energy balance of the building microclimate was developed and the equations developed had the input parameters: outside air temperature; total solar radiation; mass rate of airflow; properties and dimensions of the constructional materials; number of birds and their average weight as well as the air properties to predict hourly internal air temperature of a poultry house and sol air temperature. The mathematical model of the internal environment, developed, was solved and implemented using a computer program written in Delphi. The program solves analytically the temperatures of the building with the results presented, which compare the model with experimental measurements made in a naturally ventilated poultry house. A numerical analysis technique, finite element method, was used to approximate the temperatures at various locations of the poultry house.